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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,069	12/17/2001	Yong Yan	US 010666	3745

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EXAMINER

RAO, ANAND SHASHIKANT

ART UNIT	PAPER NUMBER
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2621

MAIL DATE	DELIVERY MODE
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07/10/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/023,069

Applicant(s)

YAN ET AL.

Examiner

Andy S. Rao

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response To Decision Rendered By The Board

1. The previous rejection of claims 1-20 have been reversed by the BPAI. Upon further consideration, a new ground of rejection is made as set forth below.
2. The treatment of the case by the BPAI is based on the amended claims filed on April 18, 2006 after the Final rejection mailed on January 25, 2006. The examiner agrees that the amendment filed on April 18, 2006 should be entered. This Office action is in response to the amended claims.

Claim Rejections - 35 USC § 101

3. 35 U.S.C 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or the composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 13-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed towards non-statutory subject matter. Independent claim 13 sets forth a program product stored on a computer readable medium for encoding a video image in an object-encoding system as described in the preamble, and thereafter recites only "means plus function" limitations in an apparatus. Independent claim 13 is considered non-statutory subject matter under 35 U.S.C. 101 since the preamble defines a computer program per se, and does not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program and the other elements of a computer which permit the computer program's functionality to be realized (see MPEP 2106). Since dependent claims 14-20 are directed towards further limitations based on the program product of claim 13,

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claims 13-20 as a whole for the reasons discussed herein do not fall within the statutory classes set forth in 35 U.S.C. 101.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 6-9, 12-15, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig et al., (RE 38,564 hereinafter referred to as "Eifrig") in view of Rosenberg.

Eifrig discloses a motion estimation and compensation of video object planes for interlaced digital video as shown in figures 1, 2, and 10-12, and the same MPEG-4 object based encoding system and method for encoding a video image, and a program product stored on a computer readable medium for encoding a video image in an object based encoding system (Eifrig: column 1, lines 35-67; column 2, lines 1-11) as in claims 1-2, 6-8, 12-14, and 18-19, comprising the same foreground shape encoding system (Eifrig: figure 1, element 137; column 5, lines 34-52) for generating foreground shape data and coding a foreground shape into a foreground video object plane (Eifrig: figure 1; column 5, lines 41-62); a padding system (Eifrig: figures 10-12; column 6, lines 14-21; column 16, lines 21-67; column 17, lines 1-67; column 18, lines 1-16: using a segmentation mask for padding); a background encoding system (Eifrig: figure 1, element 139; column 5, lines 34-62) for coding the background video object plane,

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wherein the foreground encoding system utilizes a shape-based encoding scheme (Eifrig: figure 1, element 137; column 5, lines 41-62: as provided by element 137); and wherein the background object is texture coded (Eifrig: column 5, lines 57-62: "...with texture coding...), as in the claims. However, even though Eifrig discloses a padding system, the disclosed system of Eifrig fails to explicitly disclose that the padding system pads a masked area in a background video object plane, wherein the masked area is determined from data associated with the foreground shape, as in the claims. Rosenberg discloses an apparatus and method for improved semantic compression (Rosenberg: figures 4A-4B; column 9, lines 27-67, column 10, lines 1-15; column 11, lines 64-67; column 12, lines 1-62) which makes use of a padding system (Rosenberg: column 10, lines 1-10) pads a masked area in a background video object plane (Rosenberg: column 12, lines 28-40), wherein the masked area is determined from data associated with the foreground shape (Rosenberg: column 2, lines 44-67, column 3, lines 1-7; column 12, lines 40-45: "foreground edge map") and is padded with an arbitrary value (Rosenberg: column 12, lines 45-53: "background mask pixels are zeroed out") in order to gain a significant performance improvements for coding video object sequences with moving backgrounds (Rosenberg: column 2, lines 44-67, column 3, lines 1-7; column 12, lines 28-62. A masked area in Rosenberg is defined as the area determined by the ObjectMask routine 21. In generating the background-object mask, the ObjectMask routine 21 compares the foreground edge pixels found by Sobel high-pass filter operators 19 (The data associated with the foreground shape) with the stored intensity values for such pixels.). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art at the time of invention to take the Rosenberg teaching of background mask padding as generated by foreground edge pixels (i.e. shape data) into the

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padding system of Eifrig in order confer the performance advantage of efficiently coding moving backgrounds to the overall system, as the original Eifrig system appears to only show padding of non mask generated boundary pixels of a foreground objects. The Eifrig teaching, now incorporating the Rosenberg disclosure of background mask padding as generated by foreground edge pixels, has all of the features of claims 1-2, 6-8, 12-14, and 18-19.

Regarding claims 3, 9, and 15, the Eifrig teaching, now incorporating the Rosenberg disclosure of background mask padding as generated by foreground edge map, disclose the background video object plane encoding system utilizes a frame based encoding system (Rosenberg: column 1, lines 19-21; column 5, lines 43-60), as in the claims.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig et al., (RE 38,564 hereinafter referred to as "Eifrig") in view of Rosenberg, as applied to claims 18-19 in the above paragraph(s) 5-6, and further in view of Itokawa.

The Eifrig-Rosenberg combination discloses a majority of the features of claim 20 including substantially the same MPEG-4 object based program product stored on a recordable medium for encoding a video image in an object based encoding system as discussed above, but doesn't particularly disclose wherein the background object plane is shape coded as in claim 20. Itokawa discloses an image information processing apparatus (Itokawa: figure 8) for encoding frames of background data and shape coding for background data (Itokawa: column 5, lines 31-56). Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of the Eifrig-Rosenberg combination and tertiary Itokawa reference at hand and the requisite knowledge of background and foreground encoding methodologies, to provide background shape based encoding as taught by Itokawa to the Eifrig-Rosenberg combination in

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order to allow for only selective editing of necessary portions of video sequence (i.e. either the foreground or background, but not both) and thus make the compositing process more efficient (Itokawa: column 1, lines 45-60). The Eifrig teaching, now incorporating the Rosenberg disclosure of background mask padding as generated by foreground edge pixels and Itokawa's background object plane and shape encoding, has all of the features of claim 20.

8. Claims 4-5, 10-11, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eifrig et al., (RE 38,564 hereinafter referred to as "Eifrig") in view of Rosenberg, as applied to claims 1-2, 6-8, 12-14, and 18-19 in the above paragraph(s) 5-6, and further in view of "Coding Of Arbitrarily Shaped Objects With Binary And Greyscale Alpha-Maps: What Can MPEG-4 Do For You?" by J. Ostermann (hereinafter referred to as "Ostermann").

The Eifrig-Rosenberg combination discloses a majority of the features of claims 4-5, 10-11, and 16-17 including substantially the same MPEG-4 object based encoding system and method for encoding a video image, and program product stored on a recordable medium for encoding a video image in an object based encoding system as discussed above, but doesn't particularly disclose wherein the masked area is padded with zeros when the video image comprises a P or B frame and wherein the masked area is padded with an average pixel value of the masked area when the video image comprises an I frame, as in claims 4-5, 10-11, and 16-17. However, Ostermann discloses a shape based object coder system and teaches of the particular padding of pixels to zero for P and B frames (Ostermann: page 275, section three, lines 7-10) and the padding with an average pixel of the masked area when the video image is comprises an I frame (Ostermann: page 275, section three, lines 19-27) in order to allow for efficient editing capabilities in object based video image sequences (Ostermann: page 273, section 1, lines 10-

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20). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in art, having the teachings of the Eifrig-Rosenberg combination and tertiary Ostermann reference at hand and the requisite knowledge of background and foreground encoding methodologies, to provide coding mode specific padding options as taught by Ostermann into the Eifrig-Rosenberg combination in order to acquire more efficient editing capabilities in object based video image sequences. The Eifrig teaching, now incorporating the Rosenberg disclosure of background mask padding as generated by foreground edge pixels and Ostermann's coding mode specific padding options, has all of the features of claims 4-5, 10-11, and 16-17.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andy S. Rao
Primary Examiner
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January 15, 2008

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